9/5
Tom O—
The attached summary & recommendation has been forwarded to Dan Summers. He agrees that Terra Vac appears to be BRC's best proposed alternative for remediation. Unless instructed otherwise, I intend to proceed to contract with Terra Vac. I will wait until Monday, 9/8 for your comments
SMS.

KIM'S FILE
FORMER ENVIRONMENTAL LMC SITE

INTEGRATED
Environmental Services, Inc.

**Privileged Communication**

August 27, 1997

S. Mario Stavale
Program Manager
Boeing Realty Corporation
4060 Lakewood Blvd., 6th Floor
Long Beach, CA 90808-1700

Subject: Boeing C-6 Facility, Parcel A Remediation Services Bid Package Evaluation and Recommendation

Reference: RFP ~~No. MDRC-C6RS-072297, dated July 22, 1997~~

Dear Mr. Stavale:

My staff and I have evaluated the bid packages submitted in response to the July 22, 1997, RFP to provide remediation services for C-6, Parcel A. Three companies submitted proposals: CET Environmental Services, Kennedy/Jenks Consultants, and Terra Vac Corporation. Earth Tech, Montgomery Watson, and Fluor Daniel/GTI declined to bid.

Each proposal was evaluated based on its technical merit (perceived strengths and potential weaknesses), proposed cost, approach to agency interaction, reported experience with the agencies involved, and reported performance on past and ongoing projects. In addition to reviewing the proposals, Integrated interviewed key corporate and proposed project personnel, inspected ongoing and recently completed project sites, and independently verified client and agency references. A summary of our findings is enclosed.

Based on our findings, Integrated recommends that Terra Vac be selected as the sole contractor for the Parcel A remediation work. The enclosed table presents the specific elements considered in the selection process and gives the reasons for selecting Terra Vac.

Sincerely,

Michael Young

Michael Y. Young, Ph.D.
President

Enclosure

cc: file

3990 Westerly Place, Suite 210 ◆ Newport Beach, CA 92660 ◆ Tel: (714) 852-9050 ◆ Fax: (714) 852-9011

*Privileged Communication*

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

**Bidder:** CET Environmental Services, Inc.
**Office:** 14761 Bentley Circle, Tustin, CA 92780-7226
**Proposed PM:** G. Dean Glazer, R.G., REA
**Date Submitted:** August 8, 1997

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| C-1 | Soil Remediation Goals (bid basis) | • Not to impact GW quality | |
| C-2 | Soil Remedial Technology | • *In-situ* soil vapor extraction (VE) between 30 ft to 65 ft | • VE is a widely used technology for remediation of soils VOCs |
| C-3 | GW Remedial Goals (bid basis) | • Between 10x to 100x MCLs | |
| C-4 | GW Remedial Technology | • *In-situ* methane-enriched air sparging (AS) between 75 to 85 ft<br>• Inject methane with air into wells | • To stimulate biodegradation through cometabolism<br>• Use air to inhibit formation of vinyl chloride |
| C-5 | Assumed GW radius of influence | • 30 ft | • Approximately 220 wells across the impacted GW plume |
| C-6 | Treatment of extracted air | • A 2,200 scfm VE system with two 10,000 pound carbon vessels | |
| C-7 | Field pilot tests required? | • Yes | • To verify design parameters employed in the proposal<br>• Will significantly change bid if the results are different from current assumptions |
| C-8 | Project Duration | • 24 months | • Receive NFA from WB within 24 months after system startup |
| C-9 | Any Teaming Partners? | • No | |
| C-10 | AS/VE piping | • All above ground except those north of Building 36 which will be 5 ft bgs | |
| C-11 | Associated studies during the project | • Analyze soil samples from each boring to establish baseline conc.<br>• Regularly collect GW samples<br>• Collect confirmation soil samples from about 20 borings to 70 ft bgs | • To establish baseline conditions and monitor system performance<br>• Use such information to adjust the system when needed |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| C-12 | Guaranteed Maximum Contract Amount (including 2-yr O & M, GW monitoring, and system abandonment) | • $2,040,275 | |
| C-13 | Incentive Plan | • Be compensated with a negotiated percentage of the cost savings below the budget or completing the task ahead of the schedule for each milestone | |
| C-14 | Bid Assumptions/Conditions | • Must have access to the site by 10/15/97<br>• Utilities will be provided and paid for by Boeing<br>• Require 200 amps of 480-volt, three-phase electrical power<br>• Carbon changeouts is on T&M basis | |
| C-15 | Overall Strengths (Technical Approach) | • *AS/VE is viewed as more cost-effective (cheaper and quicker) than traditional P&T method*<br>• *It is crucial that the contractor has a well designed and monitored system to ensure no off-site migration of the contaminants* | |
| C-16 | Overall Strengths (Administrative issues) | • *CET is the incumbent on the EPA Emergency and Rapid Response Services (ERRS) contract and USCOE Preplaced Remedial Action Contract (PRAC)*<br>• *Willing to negotiate and tailor an acceptable financial package to meet Boeing's needs*<br>• *Familiar with the local geology/hydrogeology*<br>• *Good working relationship with the LA-RWQCB*<br>• *Team has reputation for working under trying circumstances without giving up* | |
| C-17 | Overall Weakness | • *May not be responsive due to understaffing*<br>• *Average workmanship and work quality*<br>• *Slow in report preparation*<br>• *Not strong in design and theoretical issues* | |

*Privileged Communication*

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| | |
|---|---|
| **Bidder:** | **Earth Tech** |
| **Office:** | **100 West Broadway, Suite 5000, Long Beach, CA 90802** |
| **Date Reported:** | **July 29, 1997** |
| **Caller:** | **Hsien Chen, Ph.D., P.E. (Senior Director of Earth Tech)** |
| *Status:* | *Declined to bid* |
| *Reasons:* | *1) Earth Tech has just been retained by Montrose to provide environmental services*<br>*2) To avoid potential conflict of interest* |

*Privileged Communication*

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| | |
|---|---|
| **Bidder:** | **Fluor Daniel GTI** |
| **Office:** | **3353 Michelson Drive, Irvine, CA 92698** |
| **Date Reported:** | **August 4 and August 6, 1997** |
| **Caller:** | **Dave Backus (Vice President of FD-GTI)** |
| *Status:* | *Declined to bid* |
| *Reasons:* | *1) Too many bidders in the competition* |
| | *2) The RPF requires substantial front-end work which could be an significant overhead to him (estimated at about 200 man-hours) if FD-GTI is not the successful bidder* |
| | *3) Willing to negotiate with BRC if they are selected to do the work* |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

**Bidder:** **Kennedy/Jenks Consultants**
**Office:** **2151 Michelson Drive, Suite 100, Irvine, CA 92612-1311**
**Proposed PM:** **Craig Dial, P.E.**
**Date Submitted:** **August 11, 1997**

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| K-1 | Soil Remediation Goals (bid basis) | • Not to exceed 200 ppb to 2,000 ppb VOCs depending on distance from GW | • The proposed concentration is unrealistic and most likely is an error |
| K-2 | Soil Remedial Technology | • *In-situ* soil vapor extraction (VE) | • VE is a widely used technology for remediation of soils VOCs |
| K-3 | GW Remedial Goals (bid basis) | • < 10x MCLs | |
| K-4 | GW Remedial Technology | • *In-situ* ozone enhanced, hot air sparging (AS) down to 90 ft bgs<br>• Screen interval not specified<br>• Inject ozone with hot air into wells | • Use ozone to oxidize VOCs in the GW and limit the contaminant mass that requires VE |
| K-5 | Assumed GW radius of influence | • Not specified<br>• To be determined in the first phase of the study | • Will install wells in phases.<br>• Will use results of the first phase to fine tune the number and placement of remaining wells<br>• Total number of wells required for the project was not mentioned in the proposal<br>• The proposal only budgeted for 10 to 12 air sparging wells (due to conflicting information between page 7 and Attachment D-1) but the drawing (Figure A-3) indicated more than 22 wells will be needed |
| K-6 | Treatment of extracted air (off-gases) | • Carbon adsorption<br>• Only budgeted for 4,000 pounds of carbon | |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| K-7 | Field pilot tests required? | • No | • Will install wells in phases.<br>• Will use results of the first phase to fine tune the number and placement of remaining wells |
| K-8 | Project Duration | • < 18 months after full-scale remediation | • The proposal did not define what constitute a full scale remediation |
| K-9 | Any Teaming Partners? | • Yes (Global Solutions, Inc. and KV Associates) | • Specific roles and responsibilities of each of these two partners are vague in the proposal |
| K-10 | AS/VE piping | • All under ground at a depth minimum of 24 inches | |
| K-11 | Associated studies during the project | • Collect up to 100 soil samples during well installation to establish baseline conditions<br>• Conduct 5 sets of limited soil samples to evaluate system performance<br>• Collect 15 GW samples to assess remedial progress | • To establish baseline conditions and monitor system performance<br>• Use such information to adjust the system when needed |
| K-12 | Guaranteed Maximum Contract Amount (including system O & M and abandonment) | • $871,000 | |
| K-13 | Incentive Plan | • $15,000 fees for agreeing to Boeing's terms of no payment until the work is completed<br>• Be compensated $1,500 per calendar day for early remedial completion | • Reciprocal penalty ($1,500 per calendar day) for missing deadlines should be imposed |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| K-14 | Bid Assumptions/Conditions | • The following conditions/ assumptions are abstracted from the 8-page technical presentation of the KJ proposal.<br>• KJ developed an additional 3-page conditions entitled *Bid Basis and Assumptions* in the proposal which are not covered in this Bid Evaluation sheet<br>• BRC negotiates with agencies and obtains regulatory approvals<br>• Will remove 300 cy of soil from 2BB-36-13 area (about 25' in diameter by 25' deep)<br>• Did not include any remediation beneath Building 1<br>• Air injection blower and heater will not included in the noise reduction enclosure<br>• All wells will be outside of buildings<br>• Damage on the AS/VE system caused by site development will be paid for by Boeing<br>• If more wells are required, Boeing will pay for it (as stated in the Item K-5, the proposal did not specify total well number)<br>• Concrete pads will be left in place after system abandonment<br>• Does not include quarterly GW monitoring | • There are many unreasonable or unrealistic conditions in the proposal<br>• For example, the agencies will dictate where the confirmation samples be sampled<br>• "Approaching asymptotic conditions" as proposed in the proposal is unacceptable to agencies and BRC. Agencies issue NFA only after the site has reached an asymptotic condition. |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| | | • Locations of performance sampling shall be determined by KJ<br>• KJ reserve the right to cease remediation when the site conditions approaching asymptotic even thought the cleanup goals have not been achieved. | |
| K-15 | Overall Strengths (Technical Approach) | • *AS/VE is viewed as more cost-effective (cheaper and quicker) than the traditional P&T method*<br>• *It is crucial that the contractor has a well designed and monitored system to ensure no off-site migration of the contaminants* | |
| K-16 | Overall Strengths (Administrative issues) | • *Familiar with site and local geology/hydrogeology* | |
| K-17 | Overall Weakness | • *The proposed KJ team has not worked together before*<br>• *May not be responsive due to KJ's lack of resources*<br>• *KJ is not known for the design and operation of the proposed system*<br>• *Very slow in report preparation*<br>• *The proposal is big in conditions and short in substance. Much of the crucial information was either not proposed or stated differently in various parts of the proposal*<br>• *Many significant change orders should be anticipated based on this vague proposal.* | |

*Privileged Communication*

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| | |
|---|---|
| **Bidder:** | **Montgomery Watson** |
| **Office:** | **250 North Madison Avenue, Pasadena, CA 91101** |
| **Date Reported:** | **August 4, 1997** |
| **Caller:** | **Fred Strauss (Pasadena Office Manager of MW)** |
| ***Status:*** | ***Declined to bid**** |
| ***Reasons:*** | ***1) Believe pump and treat the best available remedial technology for the site*** |
| | ***2) It is difficult to design a P&T system to meet RFP's requirement of completing the task within 2 years*** |
| | ***3) MW is capable of designing a system to achieve the RFP objectives*** |
| | ***4) Willing to continue to participate in the project and contribute knowledge*** |

*Editorial Note: MW declining to bid appears to be an internal MW political issue. A system based on the new general specifications would be significantly less costly to construct and operate than would the system designed by MW for DAC in 1992.

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

**Bidder:** Terra Vac Corporation
**Office:** 17821 Mitchell Ave. Irvine, CA 98133
**Proposed PM:** James P. Keegan
**Date Submitted:** August 20, 1997

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| T-1 | Soil Remediation Goals (bid basis) | • Not to impact GW quality | |
| T-2 | Soil Remedial Technology | • A combination of *in-situ* soil vapor extraction (VE) and biodegradation between 19 to 40 ft bgs<br>• Time needed for soil remediation: 18 to 24 months | • VE is a proven *in-situ* soil remedial technology that can readily meet the PRGs within the 2-yr time frame stipulated in the RFP<br>• Biodegradation (bioventing) is most suitable for the site due to the presence of low permeability soils in the most impacted zone<br>• Air sparing was not selected because the low permeable layer may collect the sparged air cause forced migration of the plume |
| T-3 | GW Remedial Goals (bid basis) | • 10x MCLs | • Use risk-based cleanup criteria<br>• Negotiate risk based cleanup criteria to shorten the GW remediation period |
| T-4 | GW Remedial Technology | • Two horizontal *in-situ* biostimulation (biosparging) systems (wells) at depths of approximately 75 bgs<br>• Only has two entry points to the subsurface<br>• Rely on co-metabolism of chlorinated aliphatic compounds and aromatic compounds at the site | • The wells will be screened and installed using real-time computer guided system which takes into accounts of site lithology and hydrogeology.<br>• Horizontal bioventing is most suitable for the site because:<br>1) it stimulate microbial growth and contaminant degradation and<br>2) horizontal well is most cost-effective remedial option by covering a large area<br>• The wells will be approximately 2,500 ft in length |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| | | • Estimated time for GW remediation: 2 to 3 years | • The system will deliver 0.5 cfm/liner ft of well at pressure sufficient to overcome the hydrostatic head<br>• Air delivery will be intermittent or pulsing<br>• Use aromatic compounds at the site to stimulate microbial growth which in turn will biodegrade chlorinated compounds<br>• Formation of vinyl chloride is not a concern due to the fact that vinyl chloride will be degraded quicker than it would be formed via aerobic process |
| T-5 | Assumed GW radius of influence | • 10 ft | • The zone of treatment will be 10 ft x 2,500 ft<br>• The surrounding areas of the horizontal wells will be treated via mixing effect |
| T-6 | Treatment of extracted air | • Two 1,000 pound carbon vessels | |
| T-7 | Field pilot tests required? | • No | • Results of field pilot tests only applicable to the area under study<br>• The computer models developed by Terra Vac and the skills and knowledge acquired by TV team will be able to design and install a system that match the specific site characteristics |
| T-8 | Project Duration | • 18 to 24 months for soils<br>• 24 to 36 months for GW | • Receive NFA from WB within 36 months if not sooner |
| T-9 | Any Teaming Partners? | • No | |
| T-10 | AS/VE piping | • All piping will be installed at a depth of 5 ft bgs | |
| T-11 | Associated studies during the project | • Conduct a nutrient optimization study<br>• Conduct an extensive bioassay of the site | • To establish baseline conditions and monitor system performance<br>• Use such information to adjust the system when needed |

# Boeing C-6 Facility
# Parcel A Remediation Services
# Bid Package Evaluation

| No | Item | Bid | Reasons/Comments |
|---|---|---|---|
| | | • Analyze soil samples from each boring to establish baseline conc.<br>• Regularly collect soil and GW samples for analysis | |
| T-12 | Guaranteed Maximum Contract Amount (including 2-yr O & M, GW monitoring, and system abandonment) | • $1,136,978 | |
| T-13 | Incentive Plan | • Liquidated damages of $500/day if the system is not installed before 12/20/97.<br>• Incentive of $1,000/day if the system is installed before 12/20/97 | • The amount of daily penalty and incentive should be the same |
| T-14 | Bid Assumptions/Conditions | • Utilities will be provided and paid for by Boeing<br>• Unimpeded access to the site with rubber mounted drilling equipment be provided | |
| T-16 | Overall Strengths (Administrative issues) | • *Willing to negotiate and tailor an acceptable financial package to meet Boeing's needs*<br>• *Familiar with the local geology/hydrogeology*<br>• *Good working relationship with the LA-RWQCB*<br>• *The team appears to be qualified for the job and is eager to do the work* | |
| T-17 | Overall Weakness | • *Terra Vac Irvine office has a staff of only 14 but can access other Terra Vac offices in Bakersfield and San Francisco to provide more personnel. In addition, Terra Vac has a local pool of 30 to 40 part-time personnel that can be utilized.*<br>• *The co-metabolism of chlorinated and aromatic compounds is still new in the industry* | |